CARDIAC REHABILITATION AND ACTIVITIES OF DAILY LIVING IN WOMEN AFTER MYOCARDIAL INFARCTION

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ABSTRACT

This work was a replication of a study in which the level of physical activity in women following myocardial infarction (MI) was compared to their level of activity before MI. An extension of the initial work included an investigation of an association between activity levels in women post-MI and participation in a cardiac rehabilitation (CR) program. A sample of 52 post-MI women responded to a mailed survey. The women were categorized according to age (45-64 years and 65-90 years) and whether they had participated in a cardiac rehabilitation (CR) program post-MI. According to t-test analysis, there were no significant differences in 14 activities of daily living (ADL) when comparing women who had participated in CR with the women who had not participated in CR. An examination of the two age groups and their 14 ADLs, using a t-test analysis, revealed that the older women spent significantly less time doing housework and dusting, compared to the younger women. A chi-square concluded there was no difference in participation in CR programs between younger women compared to older women.

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CHAPTER I

INTRODUCTION

The purpose of this work was to replicate a study in which the level of physical activity in women during the recovery phase postmyocardial infarction (MI) was compared to the level of activity before MI (Mickus, 1986). This study extended the initial work to include an investigation of an association between activity levels in women post-MI and participation in a cardiac rehabilitation (CR) program.

The American Heart Association (AHA) (1989) estimates that as many as 1,500,000 Americans will have an MI annually, and about 500,000 of them will die. The annual cost of cardiovascular disease (CVD) is estimated by the AHA at $94.5 billion. This figure includes the cost of physician and nursing services, hospital and nursing home services, the cost of medications and lost productivity resulting from disability.

It is well recognized that the incidence of CVD is much greater in males than in females through age 60. The Framingham Study (Dawber, 1980) collected data over a 24-year period of time (1950-1974) and found the incidence of coronary heart disease (CHD) differed

significantly between the two sexes. In the ages 30-59, men had two to three times the incidence of CHD than women. After age 65, the incidence of MI in women increases significantly, nearly three times greater than in women younger than 65 years. However, men 65 years of age and older continue to have a slightly higher incidence of MI when compared to women: 440,000/year to 374,000/year respectively (AHA, 1989). In women of all ages, approximately 300,000 annually survive an MI (Papadopoulos, Beaumont, Shelly, & Larrimore, 1983). Cardiovascular diseases account for approximately 250,000 female deaths in the United States each year (Murdaugh & O'Rourke, 1988). CHD in women becomes more meaningful when causes of death in women are compared. CHD causes 38 percent of deaths in women, far more than breast cancer (4 percent) or stroke (10 percent) (Stampfer, Colditz, Willett, Speizer, & Hennekens, 1988).

Most of the research studies relating to MI have included only males as subjects, probably because of the difference in incidence. Nursing research related to MI has focused on wives of men who have sustained MI versus women with MI (Bedsworth & Molen, 1982; Harding & Morefield, 1976; Tyzenhouse, 1973). Two major

studies, the Framingham Study and the Nurses Health Study, have provided the majority of data relating to studies of women and MI (Dawber, 1980; Haynes & Feinleib, 1980; Willett, Hennekens, Bain, Rosner, & Speizer, 1981; Willett, et al., 1987; Rosenberg, et al., 1980; Rosenberg et al., 1981; Stampfer et al., 1985; Stampfer, et al., 1988; Bain, et al., 1981)

Several studies, done in foreign countries, have attempted to identify risk factors associated with MI in women. A New Zealand study (Scragg, Stewart, Jackson, & Beaglehole, 1987) found women who drank alcohol had lower relative risks of MI when compared to nondrinkers. Similarly, regular physical activity of five or more years was associated with decreased risks of MI. An Italian study investigating menstrual and reproductive factors associated with MI in women (LaVecchia, Decarli, Franceschi, Gentile, Negri, & Parrazzini, 1987) found increased risk in those women with a history of irregular menstrual cycles and in women whose first pregnancy or live birth occurred before age 20. Irish researchers (Robinson, Conroy, Mulcahy, & Hickey, 1988) found a distinctive risk-factor profile in women compared to men, including higher blood pressure and cholesterol levels, a greater

proportion of lifetime nonsmokers, but a higher proportion of current smokers among women who have ever smoked. Finally, a British study (Croft & Hannaford, 1989) concluded that smoking, hypertension, toxemia of pregnancy, and diabetes mellitus were associated with a significantly increased risk of MI in women. Also, current use of oral contraceptives increased the risk of MI among women who smoked.

Other studies relating to women and MI compared their prognosis to that of men with CHD. The findings have been conflicting. The Multicenter Investigation of the Limitation of Infarct Size (MILIS) Study reported a significantly worse prognosis for women, especially black women, compared to men (Tofler, et al., 1987). Robinson et al. (1988) reported that women with acute MI showed a significantly higher rate of complications and had a higher in-hospital mortality rate than did men. However, after using logistic regression to control for the effect of age on mortality and complications, no evidence of adverse prognosis associated with being female was found. They concluded that the poorer in-hospital outcome in women was due to their greater age. A second study agreed with the conclusion that the increased mortality after

MI observed in women was due to their greater age (Dittrich, et al., 1988).

Two nursing studies have compared men's and women's return to activity after MI. Foley, Sivarajan, and Woods (1983) found no significant differences in activity by men or women following MI, except that women returned to driving significantly less frequently than men. Boogard (1984) found notable differences in activity levels between men and women at one and four weeks after MI. Women were more active then men. Women reported doing light household work as early as one week after discharge, whereas men reported they were resting, relaxing, and walking around the house during the same time. Boogard also found that almost half of the men were enrolled in a structured cardiac rehabilitation program compared to only 10 percent of the women.

Purpose of the Study

The relative lack of nursing research related to women and their response to MI was the reason identified by Mickus (1986) for her study. That continues to be a valid reason for replication of the Mickus study.

The independent variable in this study was participation in a cardiac rehabilitation program post-MI. The dependent variable was the activity level of women post-MI.

Definition of Terms

For the purpose of this study the key terms are defined as follows:

Coronary Artery Disease (CAD)--A collection of disorders, including angina pectoris, congestive heart failure, and myocardial infarction, which are due to insufficient blood supply to the myocardium. Coronary artery disease is used synonymously with coronary heart disease (CHD) and ischemic heart disease (IHD).

Myocardial Infarction (MI)--a life-threatening condition characterized by the formation of localized necrotic areas within the myocardium. MI usually follows the sudden occlusion of a coronary artery and the abrupt cessation of blood and oxygen flow to the heart muscle (Luckmann & Sorensen, 1987).

Uncomplicated MI--Documented necrosis of myocardial cells based on clinical history, enzyme determinations and electrocardiogram (EKG) findings at discharge, as documented in the patient's record. There is an absence of congestive heart failure, cardiogenic shock, persistent or recurrent angina pectoris, and multifocal ventricular ectopic rhythms, and/or episodes of frequent ventricular premature contractions. For the purposes of this study, females with a diagnosis of uncomplicated MI at discharge from the hospital were identified by means of a diagnosis-related group number assigned by hospital medical records personnel.

Postconvalescent Phase--Begins approximately eight weeks after the acute onset of MI when a steady maximum level of recovery has been reached.

Activity--The things a person would ordinarily do on a given day, activities of daily living including work, leisure activities, sexual activity, and exercise (Mickus, 1986). Level of activity was determined by the subject's self-

report data measured by a Likert-type scale on a mailed questionnaire. The activity level ranged from a low of less time now to a high score of more time now spent in a specified activity.

Cardiac Rehabilitation (CR)--The return of a person disabled by CAD, to their greatest physical, mental, emotional, social, vocational and economic usefulness and if employable, an opportunity for gainful employment. Rehabilitation begins on the first day of hospitalization and evolves into a way of life (Cornett & Watson, 1984). CR consists of three phases: acute, convalescent, and maintenance. The acute phase begins during hospitalization for the acute onset of MI and lasts about two to three weeks. It consists of early mobilization with gradual increase in activity to include climbing stairs. The convalescent phase lasts up to eight weeks when the patient is able to manage basic vital needs without assistance and includes supervised physical conditioning. Maintenance phase starts about eight weeks after the acute onset and lasts for the remainder of the patient's life. It can

include structured or unstructured, supervised or unsupervised activities. In this phase all the objectives of a rehabilitation program should be achieved and the patient should return to normal life (Kellermann, 1975). Subjects in this study were surveyed during their maintenance phase (6-12 months post-MI). Measurement of participation in a CR program was self-reported by means of the mailed questionnaire.

A major limitation of this study is that the findings cannot be generalized to a larger population because the sample is small, not randomly assigned, and accidental in nature. Because this was a retrospective study, recall might be limited because the respondent might not remember previous activities with a high degree of accuracy (Polit & Hungler, 1987).

Research Hypothesis

The following research hypothesis was tested: There will be a difference in activity level, post-MI, in those women who participated in a cardiac rehabilitation program when compared to those women, post-MI, who did not participate in a cardiac rehabilitation program. The null hypothesis states:

There will be no difference in activity level, post-MI, in those women who participated in a cardiac rehabilitation program when compared to those women, post-MI, who did not participate in a cardiac rehabilitation program. The rationale for the hypothesis is based on studies finding significant increases in physical working capacities or activity levels in patients involved in cardiac rehabilitation programs (Kellermann, 1975; Conti, & Wenger, 1979; Hall, Meyer, & Hellerstein, 1984; Cornett & Watson, 1984).

Two additional hypotheses tested were: (1) There will be a difference in activity level following MI in women over 65 years of age as compared to women under 65 years of age. (2) There will be a difference in participation in a cardiac rehabilitation program between women over 65 years of age and women under 65 years of age.

CHAPTER II

LITERATURE REVIEW

The literature review begins with a discussion of the two major studies, the Framingham Study and the Nurses Health Study, that have contributed the most data related to women and MI. The individual studies relating to women and MI are briefly discussed. A discussion of studies relating to the value of cardiac rehabilitation and gender differences in cardiac rehabilitation follows. The review concludes with a detailed description of the study by Mickus (1986), which was replicated in this investigation.

Framingham Study

The Framingham Study (Dawber, 1980) was a 24-year prospective, longitudinal investigation sponsored by the National Heart Institute. Using the town census list, Framingham, Massachusetts, residents were categorized by researchers according to family size, arranged alphabetically, and then every third family was eliminated. Invitations to participate in the study were extended to a list of 6,507 individuals, aged 30 through 59 years. A sample of 2,282 men and 2,845 women was studied from 1950 to 1974. There was

an overall loss to follow-up of only two percent. The subjects were followed biennially through the use of surveys, interviews, physical and laboratory examinations. The focus of the study was atherosclerosis and the development of coronary heart disease, stroke, and peripheral arterial disease. Significant findings indicated that the incidence of CHD was two to three times greater in men aged 30-59 than in women of the same age. Risk factors to development of CHD were identified as elevated blood pressure, elevated blood lipids, sedentary lifestyle, cigarette smoking, obesity, and diabetes mellitus.

A study by Haynes and Feinleib (1980), using data obtained in the Framingham Study, investigated women, work, and CHD. An extensive psychosocial questionnaire had been administered to a sample of 350 housewives, 387 working women, and 580 men, all aged 45 to 64 years. Their analysis found that working women did not have significantly higher incidence rates of CHD than housewives (7.8 percent and 5.4 percent, respectively).

Nurses Health Study

The Nurses Health Study (Rosenberg et al., 1980) in 1976 was a large prospective cohort study of RNs,

39-55 years of age (N=121,700), who completed mailed health questionnaires. The study population was restricted to married female registered nurses, born between 1921 and 1946 who lived in the states of California, Connecticut, Florida, Maryland, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania, or Texas and who were listed in the 1972 register of the American Nurses' Association. Some of the questions related to CAD, including medical history, angina pectoris, diabetes, hypertension, hypercholesterolemia, parental history of MI, height, weight, use of cigarettes, use of oral contraceptive agents, and use of postmenopausal hormones. Follow-up questionnaires were completed in 1978, 1980, 1982, and 1984 with response rates ranging from 84 percent to 89 percent.

Several individual studies using the data obtained in the Nurses Health Study have been published. The findings of the various studies have influenced the medical/nursing care and health education of women relating to CAD (Willett et al., 1981; Willett et al., 1987; Rosenberg et al., 1980; Rosenberg et al., 1981; Stampfer et al., 1985; Stampfer, et al., 1988; Bain et al., 1981).

Smoking as a risk factor for the development of CAD in women was investigated in two of these studies. Willett et al. (1981) found (N=249) that, when other risk factors were controlled, smokers experienced a significant three-fold increase in risk of MI as compared to individuals who never smoked. Women who had stopped smoking experienced a risk of MI no greater than women who had never smoked. A later study by Willett et al. (1987) found the number of cigarettes smoked per day was positively associated with the risk of CAD. Smoking as few as one to four cigarettes per day was associated with a two-fold increase in risk of MI. Those women who smoked heavily, defined as more than 45 cigarettes per day, had a 10.8 times greater risk of MI than nonsmokers. This is especially alarming because in the past decade heavy cigarette smoking has increased in young women (Boogard, 1984; Burkman, 1988).

Using data from the Nurses Health Study, Rosenberg et al. (1980) investigated the relationship between oral contraceptive (OC) use and the development of MI. Significant findings were that OC use increased MI risk 1.6 times overall and 2.8 times among nonsmokers without other risk factors, 5.0 times for smokers with

no other risk factors, and 7.6 times for hypertensives with no other risk factors. The MI risks continued to rise in those women who used OCs and had multiple risk factors (e.g., use of OCs in hypertensive smokers increased the relative risk for MI to 170 times greater than in non-OC users without risk factors).

Bain et al. (1981), Rosenberg et al. (1981), and Stampfer et al. (1983) used data from the Nurses Health Study to investigate the relationship of early menopause and the use of postmenopausal hormones on the risk of MI. Among the significant findings were women under 35 having bilateral oophorectomy were 7.2 times more at risk for MI, use of postmenopausal hormones did not increase the risk for MI and, in fact, lowered the risk when compared to nonusers of postmenopausal hormones. These studies support the belief that estrogen is a protective factor against development of MI in premenopausal women and helps account for the increased incidence of MI in older women (Stampfer et al., 1983).

Additional Studies of Risk Factors

The relationship between menstrual and other reproductive factors and subsequent risk of CHD in

women under 55 years of age was investigated in Italy in a hospital-based study using a convenience sample of 202 women with MI and 374 control subjects (LaVecchia et al. 1987). The findings were that the relative risk of MI was significantly elevated for women with frequent irregularities in menstrual cycle and those whose age at first pregnancy was under 20 years. No consistent association was evident for age at menarche, menopausal status, parity, or number of abortions. This study also provided supportive data to the presumption of a hormonal association and occurrence of MI in females (Stampfer et al., 1985).

A large British study (N=23,000) found that smoking was the most important independent risk factor for MI in women. Other findings in their study indicated that hypertension, toxemia of pregnancy (especially if the woman was a heavy smoker), diabetes mellitus, and use of oral contraceptives by women smokers all increased the risk for MI (Croft & Hannaford, 1989). The most recent study on smoking as an MI risk factor investigated the effect of the newer brands of cigarettes with reduced yields of nicotine and carbon monoxide on the risk of nonfatal MI in women under 65 years of age (Palmer, Rosenberg, & Shapiro,

1989). The data were obtained in a study of women (N=910) with a first MI. The researchers found the estimated relative risk for current smokers as compared with those who had never smoked increased with the number of cigarettes smoked. The estimated risks did not vary according to the nicotine or carbon monoxide yield of the cigarette.

A New Zealand study (Scragg et al., 1987) evaluated the relationship between alcohol consumption and regular leisure time physical activity with nonfatal MI and sudden coronary death in men and women. Data from 591 male subjects, 1,017 control male subjects, 144 female subjects, and 569 female control subjects were gathered using a structured questionnaire and random sample selection technique. Individuals who consumed alcohol were categorized according to amount ingested. Compared with nondrinkers, the risks of MI and sudden coronary death were significantly decreased for all drinkers, except female moderate drinkers. Regular exercise was associated with a significant decrease in the risk of both myocardial infarction and sudden coronary death in both men and women when compared with nonexercisers.

Studies of Gender and Prognosis Following MI

Other studies involving women relate to the effects of gender and prognosis after MI. One such study was the Multicenter Investigation of the Limitation of Infarct Size (MILIS) (Tofler et al., 1987). The convenience sample consisted of 816 patients who were of the white or black race and in whom an MI was confirmed. Of these 816 patients, 226 were women and 590 were men, 142 were black and 674 were white. When grouped by race and gender, there were 63 black women, 79 black men, 163 white women, and 511 white men. In the MILIS Study, women had a significantly worse prognosis after MI than did men: a cumulative mortality rate at 48 months of 36 percent versus 21 percent for men. Even after adjustment for age, hypertension, diabetes mellitus, and history of congestive heart failure, mortality was significantly higher in women. Black women had a significantly poorer prognosis, with a mortality rate of 48 percent. Results of other studies, however, contradict these findings. Researchers in Ireland examined the outcome of 337 women and 643 men admitted with a first episode of MI (Robinson et al., 1988) Women showed a higher rate of complications and a higher in-hospital

mortality rate than did men. A logistic regression was used to adjust mortality and complication rates for differences in age between the sexes. When this was done, women and men had similar in-hospital prognoses. The researchers concluded that gender alone does not influence short-term prognosis. A similar conclusion was reached by researchers in California (Dittrich et al., 1988). To assess whether or not early and late mortality after MI was greater in women, 2,089 patients (1,551 men, 538 women) were followed for one year after MI. In the hospital, women had a significantly increased mortality rate when compared to men (17.5 percent vs 12.3 percent) and averaged seven years older than the men. However, no difference in mortality rates were observed for up to one year after discharge. When age stratification and multivariate analyses of historical, clinical, and laboratory data were performed, the difference of in-hospital mortality between genders was no longer present. It was concluded that the increased mortality after MI in women was due to their older age.

Studies of Cardiac Rehabilitation

Conclusions relating to the value and/or risks of

CR programs are difficult to reach because programs are not standardized and methods used to study the programs have varied (Kellermann, 1975). Various studies conducted over 12 years were described by Kellermann (1975). The studies all used the experimental design with control groups, random assignment, and comparison with matched healthy subjects. Among the findings were the following: The physical working capacity (PWC), as measured by a spiroergometer, using the pulse rate, BP, oxygen consumption, minute ventilation, and EKG as parameters, increased significantly ($p<0.001$) in uncomplicated MI patients after four months of participation in an exercise program that required 50 minutes of exercise three times weekly. Eighty-five percent of the CR participants had returned to work. A battery of psychological tests found a significant increase in emotional stability, self esteem, and a significant decrease in anxiety, frustration, and depression in the CR group. It was also noted that 90 percent of the CR group did not continue with regular physical exercise on their own after completion of the four-month CR program. The PWC dropped, drug dependency increased, and general complaints increased in this dropout group. Those MI patients who continued with a

supervised CR program for two years increased their PWC 130 percent when compared to normal, healthy men. Kellermann (1975) concluded, however, that there was lack of evidence that CR, based on physical conditioning programs, had any effect on prevention of reinfarction and/or death from MI.

Hall, Meyer, and Hellerstein (1984) concurred with Kellermann's conclusion about CR and its long-term effect on life expectancy. They justified the practice of CR by discussing the improvement in the quality of life, including improvement in sexual activity and a lessening of depression and anxiety. They also pointed out that compliance and adherence to a physical conditioning program were major deterrents to successful CR. They cited several studies that suggest local factors determine the success of a CR program, including transportation, motivation, and cooperation, the available facilities, program design, and the attitudes of the community and of the health professionals.

The literature also suggests (Kellermann, 1975; Hall et al., 1984; Cornett & Watson, 1984) that the development of an MI is multifactorial and, therefore, CR programs must include a variety of components such

as exercise, adaptation to stress, dietary instruction, cessation of smoking, vocational counseling, and weight control/loss programs.

Studies of Gender and Recovery Following MI

Foley, Sivarajan, and Woods (1983) examined whether or not there were sex differences in recovery from MI. Their convenience sample consisted of 218 males and 39 females in the Seattle area who had sustained MIs and were in a CR program. Data were collected during hospitalization, at three months, and six months post-MI. There were no significant differences between men and women in recovery. An activity questionnaire showed that women returned to driving significantly less frequently than men ($p<0.05$).

Boogard (1984) compared the return to physical activity, psychosocial aspects, and family interrelationships in a convenience sample of men and women recovering from an MI (N=10 men, 10 women). A semi-structured interview was used to examine the above issues retrospectively. There were notable differences in the types and intensity of activities performed by both men and women post-MI. The activities described

by women at one week after discharge were slightly more strenuous than those described by men. Almost half of the men enrolled in a structured CR program, whereas only 10 percent of the women enrolled. Of the women, 67 percent failed to return to work six months after infarction compared to only 10 percent of the men. Men resumed sexual activity earlier than women. Most of the men reported that family members waited on them during the early rehabilitation period. The women as a group spent more time at home and resisted being helped by family members. Both men and women described being depressed during their rehabilitation period.

Original Study by Mickus

The paucity of studies examining women and their activity levels after MI indicated to Mickus (1986) a need for such an investigation. It is her study that was replicated in this work. The original study was a retrospective descriptive study conducted by mailed questionnaire to a convenience sample of 58 Boston-area women who had sustained an uncomplicated MI within the past 5-11 months. The research question addressed was, "What is the difference in physical activity in women before and after MI?" (p. 376). There was a 43 percent

response rate (N=25) of viable questionnaires. This small sample size is one of the shortcomings of the study. In an attempt to overcome this problem, this researcher used a larger sample and sent follow-up questionnaires to nonrespondents in order to increase response rate.

Demographic data, functional classification of heart disease, and information related to the MI were obtained by chart review (Mickus, 1986). The questionnaire (Appendix 1) was developed by Mickus (1986). The subjects compared their post-MI activity levels to their pre-MI activity levels in specific activities related to activities of daily living (ADL), work, leisure, exercise, and sexual activity. Subjective information concerning symptomatology after discharge from the hospital, perceived differences in activity level after infarction, and reasons for not returning to previous activities were also elicited. Determination of the subjects' post-MI functional classification of heart disease was based on the responses to questions regarding activity levels and symptoms.

A pilot study was conducted with three post-MI women prior to the initiation of the major study. It

was found that not all questions applied to every subject. Content validity of the questionnaire was established by a panel of three cardiovascular clinical specialists. Measures for reliability were not conducted. In this study, reliability was measured by obtaining a test-retest coefficient from a pilot group.

Data were analyzed with descriptive statistics using measures of central tendency and variability. The following results were found in Mickus' (1986) study: mean age was 66 years, 60 percent of the women spent less time in activity post-MI, 20 percent participated in a CR program. Slightly less time was spent in sexual activity, working at a job for pay, and doing housework. About the same amount of time was spent exercising, driving, walking, and sleeping. Time spent "sitting around the house, taking it easy" increased after MI.

The average time required to resume specific activities varied. Employment after MI was resumed within 12 weeks, housework within 16 weeks, return to sexual activity within 12 weeks, return to normal activity occurred within 6 months after MI. Three women stated specifically that they had not returned to normal activity (Mickus, 1986).

After discharge from the hospital, all 25 experienced one cardiac symptom; 10 women experienced six cardiac symptoms. The most common symptom (92 percent) experienced was shortness of breath with exertion. Eighty-four percent claimed to experience depression.

Examination of Functional Class of Heart Disease before MI revealed 20 women were Class I and 5 women were Class II. Based on symptoms after MI, 10 were Class I, 11 were Class II, and 4 were Class III.

Because of the lack of any new studies relating to women and activity post-MI and Mickus's findings of a high percentage of women (62 percent) reporting decreased activity, 84 percent reporting depression post-MI, and a low participation in cardiac rehabilitation (20 percent), this researcher believed there was a definite need for further investigation.

CHAPTER III

METHODOLOGY

In order to discover whether there was a difference in activity levels in women, post-MI, between those who participated in a CR program and compared to those women who did not, a sample of women who had sustained an uncomplicated MI during a six month period of time was surveyed, using a questionnaire developed by Mickus (1986) and modified by this researcher. The major research hypothesis tested by the questionnaire was: There will be a difference in activity levels in women, post-MI, who participated in CR compared to women, post-MI, who did not participate in CR. Other hypotheses tested were: There will be a difference in activity level, post-MI, in women 65 years or older compared to women, post-MI, 64 years or younger. There will be a difference in participation in CR programs between older women, aged 65 years, or older compared to younger women, aged 64 years or younger.

Population and Data-Collection Process

In order to gather an adequate sample of women,

post-MI, the medical records department from a large (>500 beds) teaching hospital in a Midwestern city was utilized as a resource for identifying women who had the discharge diagnosis of acute MI. Questionnaires were mailed to all women who had sustained an uncomplicated MI in the time range of 6 to 12 months from the date of the medical record review. It was assumed that the women in the sample had access to a cardiac rehabilitation program, which included instruction on the importance of positive lifestyle changes, such as consuming a low fat-low cholesterol diet, cessation of smoking, and regular exercise for successful convalescence post-MI. A sample of 93 was invited to participate in the data-collection period.

Modification of Original Instrument

The Activities of Daily Living Questionnaire developed by Mickus (Appendix 1) and modified by this researcher (Appendix 2) was employed. The original instrument consisted of 16 questions. The first question lists 14 separate areas of activities of daily living (ADLs). The subjects were asked to compare the amount of time spent in each activity now to the time before their MI. Responses were circled on a Likert-

type scale, ranging from less time spent now (score of 1) to more time spent now (score of 5). Scoring for this first question consisted of summing the responses and calculating group means for each activity. Questions 2-11 were forced choice yes-no or short-answer format relating to work or volunteer activity. Scoring for questions 2-11 consisted of identifying common themes to the short answer questions and calculating percentages to the yes-no answers. Question 12 listed several common cardiac symptoms and was answered on a Likert-type scale according to frequency of occurrence, ranging from never to always. Scoring was done by calculating frequency distribution of the individual symptoms. The modified questionnaire included the following additional three questions relating to exercise and cardiac rehabilitation. Question 13 asked, Are you currently exercising, such as walking or bicycling, at least 3 times/week for at least 25-30 minutes? Question 14 asked, Did you participate in a cardiac rehabilitation program after your heart attack? Question 15 asked, Are you currently participating in a cardiac rehabilitation program? The sums and percentages answering yes and no to questions 13-15 were calculated. This investigator

eliminated the last two questions on the Mickus form that asked, With whom do you live? and What medicines are you currently taking? That information was irrelevant to the current study. Demographic data collected were limited to age and marital status. A statement that could be checked by the subjects if they wished the results to be mailed to them was provided at the end of the tool. The questionnaire was coded in order to follow up nonrespondents and to facilitate analysis of the data. A cover letter and a return, stamped, self-addressed envelope were mailed with the questionnaire.

Content Validity

Content validity was obtained by having three cardiovascular clinical nurse specialists critique the revised questionnaire. No revisions were recommended by the clinical specialists.

Pilot Study and Reliability Testing

A pilot study was conducted prior to the actual mailing of surveys. The pilot consisted of five subjects, having the same characteristics as described earlier for the sample. It was conducted to establish

test-retest reliability of the questionnaire. The questionnaire was completed on two occasions, over a two- to four-week time span, using the same group. The subjects were informed of the purpose of the pilot study. Their acceptance of being retested was elicited before beginning the pilot study. The pilot study also determined whether the tool was clearly written. The arrangement of the scale descriptors following question 12 was changed to improve clarity, after the pilot was conducted. It was determined, during the pilot study, that the questionnaire could easily be completed within 20 minutes. The reliability of the tool was examined using the test-retest approach. The reliability coefficient was $r = 0.93$.

Approval Process

Before the study was carried out, approval was obtained from the Drake University Human Subjects Research Review Committee and from the hospital Institutional Research Review Committee. Upon recommendation from the Senior Vice President Nursing Service, all the cardiologists who practiced at the hospital were contacted about the proposed study. A letter was mailed to the physicians providing a brief

explanation of the study; a copy of the questionnaire was enclosed as well as a request for their approval of their patients' being mailed a questionnaire. A yes/no check-off consent form was included with the letter (Appendix 3). They were asked to return the consent form in the stamped, self-addressed envelope included with the letter. All but two physicians gave their consent. The patients of the two nonconsenting physicians were not included in the sample group. After receiving physician consent, a contact person within the medical records department of the hospital was identified. The proposed study was explained to the contact and approval to use the hospital data base was granted. All of the above committees, physicians, and medical records personnel were assured that the subjects would be free from harm, that confidentiality would be upheld, and that informed consent would be obtained from the subjects. This was accomplished by explaining in the cover letter mailed with the questionnaire the purpose and value of the research study (Appendix 4). The subjects were encouraged to participate, but it was explained that they were not obligated in any way to take part. They were informed that participation was strictly voluntary. In case the

subject wanted more information or verification of the study, a phone number for the researcher and for the academic advisor and the address of Drake University was included. The subject's participation by returning the completed survey was assumed to indicate voluntary informed consent. Subjects were informed that confidentiality would be maintained; names and addresses were to be known only to the researcher and would not be made available to anyone else. Subjects were asked to return the completed questionnaire within three weeks. Those who did not return the tool within the allotted time were mailed a second questionnaire and letter requesting their cooperation in the study (Appendix 4). Data collection ceased three weeks after the second mailing.

CHAPTER IV

ANALYSIS

Descriptive Statistics

Ninety-three questionnaires were initially mailed, resulting in 49 responses. A second mailing to nonrespondents returned 11 questionnaires. An overall total of 60 subjects returned the questionnaires. Of those 60 surveys, 52 were determined to be viable (56 percent response rate). Four of the nonviable surveys were returned unanswered. The other four nonviable surveys were returned by family members stating that the subject had died. The age range, frequency of the ages of those responding, and mean age of the sample group (N = 52) are displayed in Figure 1.

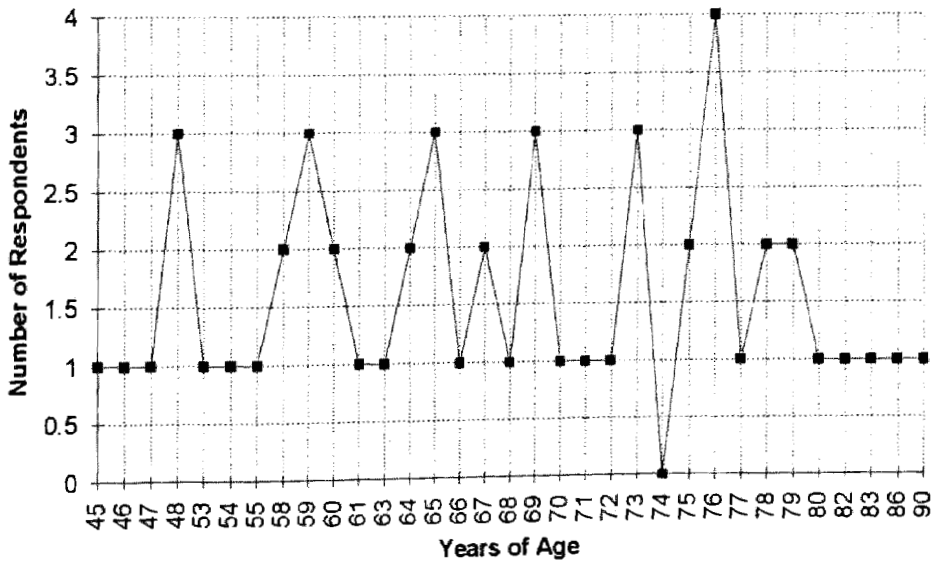

Figure 1. Age Frequency (Mean Age = 66.87)

To investigate the women more closely, the sample group was subdivided into two major categories: age and participation in cardiac rehabilitation (CR). The age category consisted of two groups. Group I (n =20) was women aged 45 years to 64 years. Group II (n=32) was women aged 65 years to 90 years. Twenty-nine women (55.8 precent) indicated that they had participated in CR. Twenty women had not participated in CR. Three of the respondents did not indicate whether or not they had participated in CR. Of those women who had participated in CR, 13 were from the younger-aged group and 16 were from the older-aged group. Seven of the younger women and 13 of the older women indicated that they had not participated in a CR program.

The majority (51.9 percent) of the sample were married women. The type and incidence of marital status of the sample are shown in Figure 2.

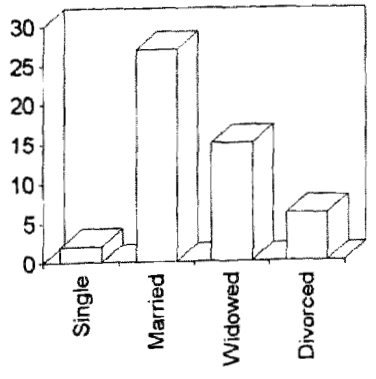

Figure 2. Marital Status

All the respondents were asked to rank the amount of time they were currently spending in 14 activities of daily living compared to the amount of time before their heart attack. The scale ranged from 1 = less time now to 5 = more time now. The overall number responding to each activity and the mean level of activity is shown in Table 1.

Table 1
Mean Level of Activity After Myocardial Infarction (MI)

Activity	n	Mean
Sleeping	51	2.94
Bathing	50	3.02
Eating	51	2.92
Sitting around the house	50	3.32
Doing housework	47	2.57
Dusting	45	2.53
Ironing	43	2.35
Working on a hobby	45	2.67
Walking	48	3.67
Exercising	49	3.43
Driving	42	2.86
Engaging in sexual activity	36	2.50
Doing volunteer work	32	2.09
Working at a job for pay	29	2.38

A comparison of the two major categories, participation in CR and age, and their ranking of the amount of time currently spent in the 14 activities of daily living compared to before their heart attack, are graphically displayed in Figure 3 and Figure 4.

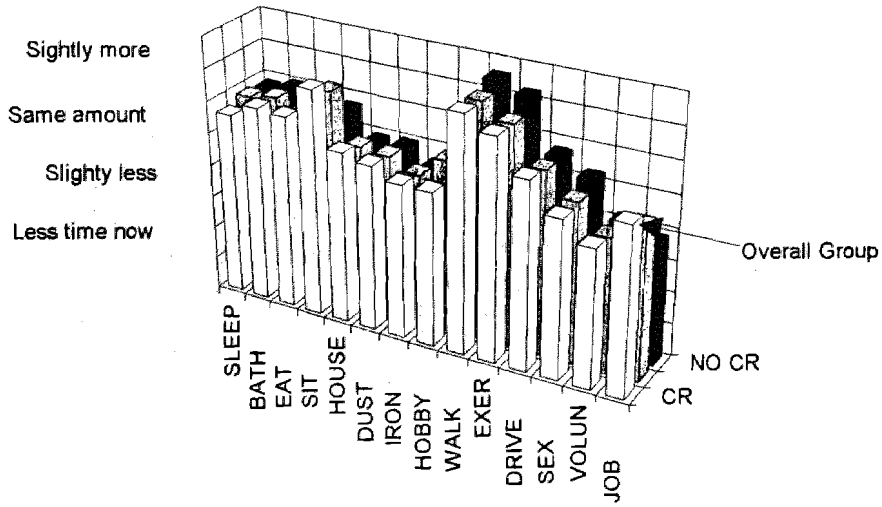

Figure 3. Means of the 14 ADLs Based on CR Participation

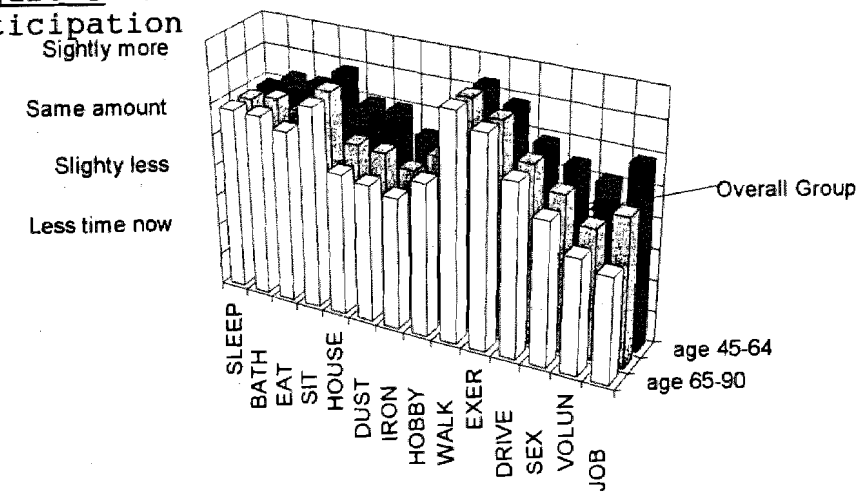

Figure 4. Means of the 14 ADLs Based on Age Groups

The overall group was then asked to compare the amount of time currently spent in physical activities in general compared to time spent before their heart attack. They were to indicate whether they spent less time, the same time or more time now in physical activities. Figure 5 displays their responses (n=45).

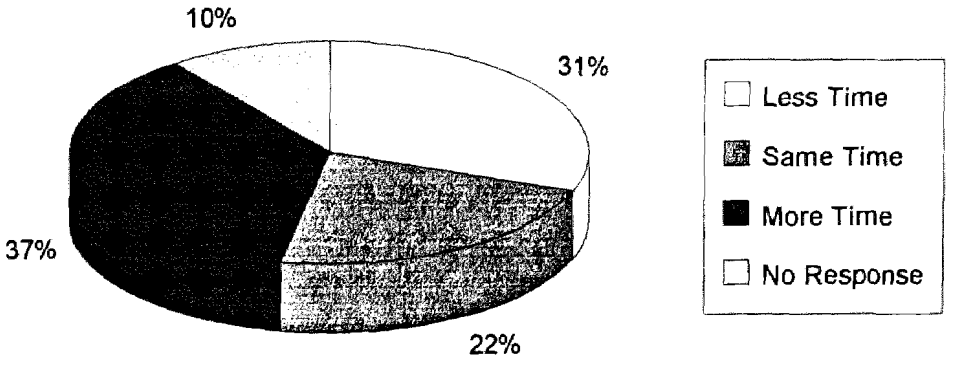

Figure 5. Change in Physical Activity in Overall Group

As shown in Figure 5, slightly more time was spent in physical activities by the overall group. The women who had indicated they were spending less time now in physical activity were asked to give a reason. Reasons cited for spending less time at physical activity included "too tired or fatigue" (n=7, 15 percent), "stress or anxiety" (n=2, 3.8 percent), "have help" (n=2, 3.8 percent) and "doctor's orders" (n=1, 1.9 percent).

Analysis of the change in physical activity within the two major categories described earlier (participation in CR and age) did reveal some differences. Figures 6 and 7 display the overall change in physical activity comparing those who participated in CR to those women who did not participate. Figures 8 and 9 display the same change in physical activity comparing the two age groups, those women aged 45-64 years and those aged 65-90 years. Although the older women and those who did not participate in CR indicated that they spent more time in physical activity post-MI compared to the younder women and those who did participate in CR, the differences were not significant using a two-tailed t test.

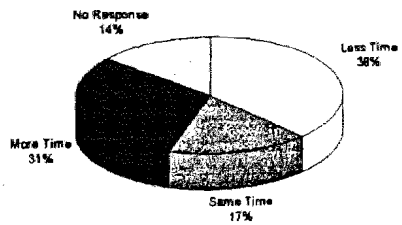

Figure 6. Change in Physical Activity Based on Participation in CR

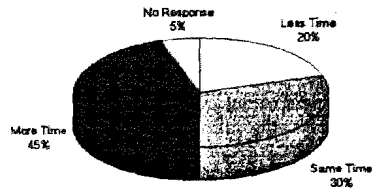

Figure 7. Change in Physical Activity Based on No Participation in CR

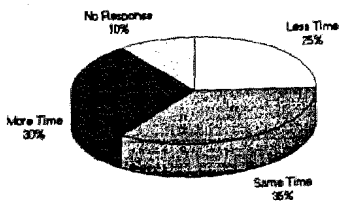

Figure 8. Change in Physical Activity of Those Aged 45 to 64

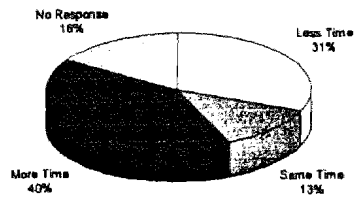

Figure 9 Change in Physical Activity of Those Aged 65 to 90

The women who had been employed prior to their MI were asked to indicate how many weeks passed before they returned to their job. Of those responding (n=14), the time ranged from 2 weeks (1.9 percent) to 14 weeks(1.9 percent) with the largest number returning to their job within 6 weeks (21.4 percent). Of those who had worked prior to their MI, only one person responded that she did not return to her job and that was due to "less stamina." Two women reported changing jobs after their MI. Their reasons for changing were "too much pressure of owning my own business" and "couldn't rush as fast as necessary."

The women were asked to indicate how much time in weeks passed before resuming activities in the following four areas of activity: volunteer work, housework, sexual activity, and their normal activity level. Table 2 displays their responses.

Table 2
Range of Weeks to Return to Specific Activities after MI

Activity	n	Time in weeks
Volunteer Work	7	4-28
Housework	48	0-16
Sexual Activity	22	1-10
Normal Activity Level	37	2-24

Additional Analysis

A comparison of the differences in time resuming the specific activities, plus returning to work, was carried out between the two groups categorized according to age. The mean of weeks to activity between the two groups compared to the overall group is displayed in Figure 10.

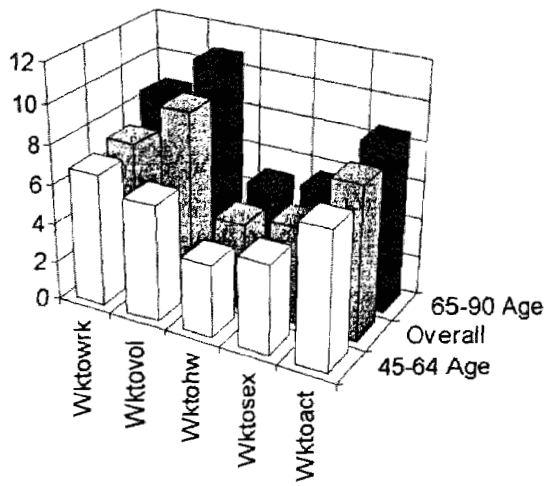

Figure 10. Mean of Weeks to Resumption of Activities According to Age

There were no significant differences in time when comparing the two age groups using a two-tailed, *t*-test at the $p<.05$ level.

The overall group was asked whether they were currently exercising, such as walking or bicycling at least three times a week for at least 25-30 minutes. Of those that responded (n=50), 59.6 percent indicated that they were currently exercising. There were no significant differences in current exercise patterns when the two age groups or the groups divided according to CR participation were compared using the two-tailed, t-test at the $p<.05$ level. As mentioned previously, a majority of the overall group (n=29, 55.8 percent) indicated that they had participated in a cardiac rehabilitation (CR) program after their MI. Only one woman in the overall group indicated that she was currently involved in a formal CR program.

The last area investigated was whether or not the women had experienced any of the following symptoms after their MI: chest pain at rest, chest pain with exertion, shortness of breath at rest, shortness of breath with exertion, heart palpitations, or depression. They were asked to rank the frequency of occurrence of any of the above symptoms ranging from 1 = _never_ to 5 = _always_. Of those responding, all but two of the women experienced at least one cardiac symptom after discharge. The most commonly experienced

symptoms were chest pain with exertion (n=32, 69.5 percent) and shortness of breath with exertion (n=33, 71.7 percent). Thirty-one women (63 percent) reported experiencing depression at times, with five of them indicating they were always depressed. The means of occurrence of each symptom found in the overall group was compared to the two age groups identified earlier. Also, the overall group was compared to the two different groups determined by whether or not they had participated in CR. The means of occurrence of the different symptoms of these various groups are compared in Figure 11.

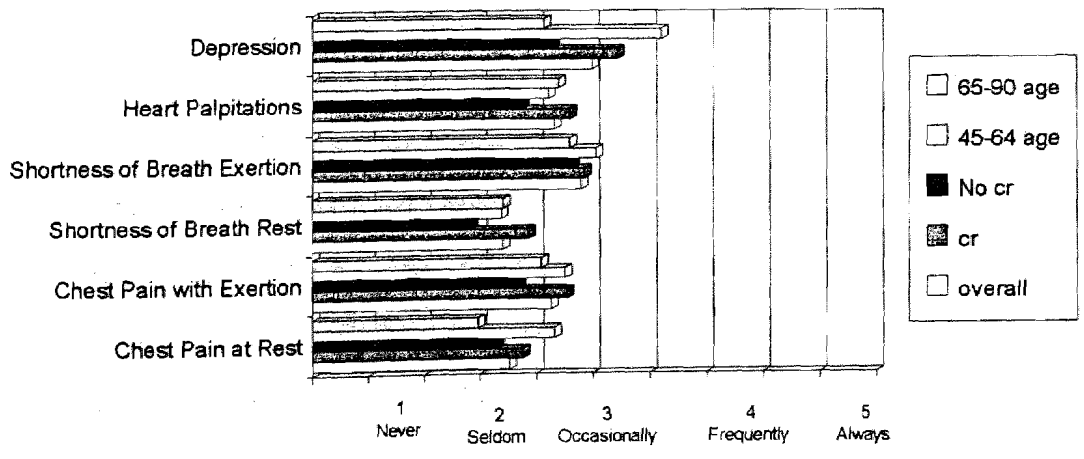

Figure 11. Means of Cardiac Symptoms

Testing of Hypotheses

The first hypothesis tested was: There will be a difference in activity levels in women, post-MI, who participated in CR compared to women, post-MI, who did not participate in CR. The alpha level was set at .05. There were no significant differences found in any of the 14 activities using a two-tailed t test for independent groups. The means of the 14 activities of daily living and the comparisons between the above two groups, plus the overall group means are shown in Figure 3.

The second hypothesis tested was: There will be a difference in activity level, post-MI, in women 65 years or older compared to women, post-MI, 64 years or younger. This hypothesis was tested by categorizing the women into two groups by age. Group 1 was those women 64 years of age or younger (n=20), and Group 2 was those who were 65 years of age or older (n=31). The two-tailed t test for independent groups, at the $p<.05$, in each of the 14 activities was again used. Of the 14 activities of daily living, 2 of the areas demonstrated significant differences in activity level. The older women spent significantly less time doing

housework (t [43]=2.93, $p<.005$) and dusting (t[34]=3.69, $p<.001$). The means of the 14 activities of daily living comparing the two age groups, plus the means of the overall group are displayed in Figure 4.

The third hypothesis tested was: There will be a difference in participation in CR programs between older women, aged 65 years or older compared to younger women, aged 64 years or younger. The women were again categorized into two groups by age, as in the above hypothesis. A chi-square for independence, at the $p<.05$ level, was used to test this hypothesis. There was no significant difference by age in participation in CR programs.

CHAPTER V

DISCUSSION AND RECOMMENDATIONS

Review of the literature revealed very few studies of women and CAD. The two major studies that had been conducted, the Framingham Study (Dawber, 1980) and the Nurses Health Study (Rosenberg et al., 1980), were associated with the identification of risk factors in women for acquiring CAD. Two other studies involving women and CAD (Tofler et al., 1987; Robinson et al., 1988) examined the effects of gender and prognosis after MI, with conflicting results. The studies that had been documented regarding the effects of cardiac rehabilitation had only men as subjects. Those studies (Kellerman, 1975; Hall et al., 1984) did conclude that participation in CR did improve the quality of the men's life, physically and emotionally. Foley, Sivarajan, and Woods (1983) compared 218 men to 39 women and their recovery from MI. They found no difference between the two sexes in their recovery. Only Boogard (1984) and Mickus (1986) investigated return to physical activity by women recovering from MI. Boogard compared men and women, whereas Mickus examined only women.

Comparison of Original and Current Study

Comparison of the findings of this study to the findings of the original study by Mickus (1986) are interesting. The sample size in this study was 52 compared to 25 in the original study. The mean age of the respondents was very similar, 66 years in the original study compared to 66.8 years in this study. Mickus (1986) found that 60 percent of her sample spent less time in physical activities post-MI, and in this study 30.6 percent of the respondents spent less time in physical activity. Perhaps the difference in physical activity change was due to the difference in participation in cardiac rehabilitation post-MI between the two samples. Mickus (1986) reported only a 20 percent participation in CR, whereas in this study 55.8 percent of the women participated in CR. However, "too tired," "fatigue," or "tire out too easily" were the most common responses in both studies when subjects were asked why they spent less time in physical activity.

Comparing the results of the current study with Mickus's findings in an examination of the 14 individual activities, subjects in this more recent study reported less sitting around the house and higher

levels of other activities, such as sexual activity, working, exercising, and walking. In the current study, 87.5 percent returned to work compared to 75 percent in the previous study.

The time needed to return to specific activities, such as employment, sexual activity, housework, and normal activity, revealed very few differences between the two studies. All of the comparisons of times were within one week of each other. It was interesting to note that there were no significant differences in time resuming activities between the younger and older women in the current study.

A comparison of the reported cardiac symptoms between the two studies also reveal similar results. Mickus (1986) reported that all of the women in her study reported at least one symptom. The current study revealed a 96 percent incidence of symptoms, with only two people asymptomatic. A high incidence of depression following MI has been noted by other researchers (Boogard, 1984; Mickus, 1986). In this study the incidence post-MI of depression was 63 percent, whereas Mickus reported an incidence of 84 percent. The etiology of the depression is unknown; however, inability to perform household tasks because

of their physical condition was indicated in the study by Boogard (1984). The higher incidence of reported depression in the younger-aged women (a mean score of 3.1) compared to the older women (a mean score of 2.06) in the current study might be related to the lower level of physical activity found in the younger women.

Further Discussion of Current Study

The significant findings in activity level in younger women compared to older women in the areas of housework, dusting, and ironing could be due to Type-I error since multiple *t* tests were conducted, increasing the opportunity for Type-I error. However, the older women might not exert as much time and energy in housekeeping chores compared to the younger women, because of the aging factor.

An unexpected outcome of this study, although not a significant finding, was that the older women spent more time in physical activity compared to the younger women; and those women who had not participated in CR spent more time in physical activity post-MI compared to those who had participated in CR. This researcher had hoped to find a significantly higher level of activity in those who had participated in CR compared

to those who had not participated. The finding that 59.6 percent of the sample was currently exercising independently, even though only 55.8 percent participated initially in CR was encouraging. The finding demonstrates that a majority of the women were exercising post-MI.

During the course of the study, there was additional communication with many of the women who were being surveyed. Eleven of the subjects added personal notes or letters when returning the survey. Nine of those women wanted to provide more of their medical history, including how they were currently progressing. Several of them also shared how lucky they felt to be alive and how they were enjoying each day to the fullest. One woman wrote how glad she was to see that a study was finally being done that focused only on women and their heart disease. Two of the 11 wrote about their feelings of depression. In fact, one of the women expressed such severe feelings of depression that the appropriate cardiologist was informed of her stated condition. Telephone calls were received by two of the women invited to participate in the study. Both of the women expressed concern about how they had become known to the researcher. They both

felt that a breach of confidentiality about their medical history had occurred. After explaining the process used to identify women who had suffered an MI and given reassurance that the actual medical record of each of the women was never reviewed, one of the women consented to participate in the study. The other woman continued to be very angry and contacted the hospital administration and her cardiologist about her concerns. After careful review, both the cardiologist and the hospital administration reassured this researcher that correct protocol had been followed, that no harm had been done, and confidentiality about the individual and her medical condition had been maintained.

Limitations of Current Study

Several limitations of this study can be identified. As mentioned earlier, generalization to the population of women with MI cannot be made because of the small sample size. Because one of the cardiologists does not routinely encourage his patients to participate in CR, it could not be assured that all of the respondents had equal opportunity for CR.

Implications for Nursing Practice

Despite these limitations, several implications for nursing practice may be considered. First, a psychological assessment followed by inclusion of a support system for care of women during hospitalization and following discharge might help to alleviate the feelings of depression following MI. Nurses should continue to stress to the patient the importance of participation in CR and of continuing an exercise routine on a regular basis to attain optimal activity levels and a feeling of well-being. Nurses should not assume that women over 65 years of age are not as likely to participate in CR or incorporate an exercise plan into their activities of daily living. Older women should be encouraged to participate in CR as fervently as younger women.

Recommendations for Further Research

Further research should examine a larger sample of women from various areas of the country to substantiate the findings of these two studies. A much more indepth study of cardiac rehabilitation and its effect on promoting positive lifestyle changes in women needs to be conducted. Although this study does not support the

concept that CR encouraged an increase in physical exercise in those women surveyed, further research needs to occur in order to substantiate that finding. If substantiated, an exploration of what factors might account for the lack of support for CR would need to be done. An investigation of depression following MI and its effect on exercise habits, especially in younger women, needs to be conducted. Another area needing to be explored is the strength of the effect that a personal support system, such as a spouse, family, or other social relationships, has on encouraging the woman to make positive changes and to continue living a healthier lifestyle in order to decrease the risks of CAD. Finally, because of the deficiency of data relating to women and heart disease, research in all areas needs to be enlarged and continued.

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Appendix 1

answer the following questions.

'ink about the amount of time you spent in doing physical activities before your heart attack. For the following items, please indicate hether you feel you spend less time, the same amount of time or more time in these activities *now* compared to the time *before* your art attack.

ircle the amount of time you spend in each activity now compared with the time before your heart attack:

Activity	*Frequency*				
ng	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
g, grooming, dressing	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
]	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
g around the house, taking easy	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
] housework	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
ing	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
ng	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
king on a hobby	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
king	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
'cising	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
ing	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
jaging in sexual activity	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
ng volunteer work	less time now	slightly less time now	same amount of time now	slightly more time now	more time now
rking at a job for pay	less time now	slightly less time now	same amount of time now	slightly more time now	more time now

. When you consider the amount of time you spend in physical activities *now* compared to the amount of time you spent in doing physical activities *before* your heart attack, would you say you spend less time, the same amount of time, or more time?
__Check one: less time___ same time___ more time___

3. If you answered "less time," what is the reason that you *are* doing less now than before your heart attack?
   If you are retired or did not work before your heart attack, go to question 8.
4. After you came home from the hospital, how many weeks passed before you returned to your job?
5. If you did not return to your job, what was the reason?
6. Did you change jobs after your heart attack? Yes___No___
7. If you did change jobs, what was the reason?
8. If you did volunteer work before your heart attack, how many weeks passed after you came home from the hospital *before* you began to do your volunteer work?
9. After you came home from the hospital, how many weeks passed before you began to do any housework?
10. If you engaged in sexual activity before your heart attack, how many weeks passed after you came home from the hospital before you engaged in any sexual activity?
11. After you came home from the hospital, how many weeks did it take you to return to your normal activity level?
12. Since you have been at home, have you experienced:

Symptom	*Frequency*				
Chest pain at rest?	never	seldom	occasionally	frequently	always
Chest pain with exertion?	never	seldom	occasionally	frequently	always
Shortness of breath at rest?	never	seldom	occasionally	frequently	always
Shortness of breath with exertion?	never	seldom	occasionally	frequently	always
Heart palpitations or fluttering in your chest?	never	seldom	occasionally	frequently	always
Depression?	never	seldom	occasionally	frequently	always

13. Did you participate in a cardiac rehabilitation program after your heart attack? Yes___ No___
14. Since your discharge from the hospital, have you been following an exercise plan? Yes___ No___
15. With whom do you live? (Check all that apply.)
    by myself _____
    husband _____
    siblings _____
    children _____

Appendix 2

Please answer the following questions.

Age _____ Marital Status: (Check one) _____ Single _____ Married _____ Widowed _____ Divorced

1. Think about the amount of time you spent in doing physical activities before your heart attack. For the following items, please indicate whether you feel you spend less time, the same amount of time or more time in these activities now compared to the time before your heart attack.

On a scale of 1-5 circle the amount of time you spend in each activity now compared with the time before your heart attack.

Scale of 1-5
1 = less time now
2 = slightly less time now
3 = same amount of time now
4 = slightly more time now
5 = more time now

Activity	Frequency				
Sleeping	1	2	3	4	5
Bathing, grooming, dressing	1	2	3	4	5
Eating	1	2	3	4	5
Sitting around the house, taking it easy	1	2	3	4	5
Doing housework	1	2	3	4	5
Dusting	1	2	3	4	5
Ironing	1	2	3	4	5
Working on a hobby	1	2	3	4	5
Walking	1	2	3	4	5
Exercising	1	2	3	4	5
Driving	1	2	3	4	5
Engaging in sexual activity	1	2	3	4	5
Doing volunteer work	1	2	3	4	5
Working at a job for pay	1	2	3	4	5

2. When you consider the amount of time you spend in physical activities now compared to the amount of time you spend in doing physical activities before your heart attack, would you say you spend less time, the same amount of time, or more time?
Check one: less time ____ same time ____ more time ____

3. If you answered "less time", what is the reason that you are doing less now than before you heart attack? _____

PLEASE TURN OVER AND COMPLETE OTHER SID

If you are retired or did not work before your heart attack, go to question 8.

4. After you came home from the hospital, how many weeks passed before you returned to your job? _____

5. If you did not return to your job, what was the reason?

_____

6. Did you change jobs after your heart attack? Yes ____ No ____

7. If you did change jobs, what was the reason? _____

_____

8. If you did volunteer work before your heart attack, how many weeks passed after you came home from the hospital before you began to do your volunteer work? _____

_____

9. After you came home from the hospital, how many weeks passed before you began to do any housework? _____

10. If you engaged in sexual activity before your heart attack, how many weeks passed after you came home from the hospital before you engaged in any sexual activity? _____

11. After you came home from the hospital, how many weeks did it take you to return to your normal activity level? _____

12. Since you have been at home, have you experienced any of the following symptoms? (Use the scale of 1-5 as designated below.)

1=never 2=seldom 3=occasionally 4=frequently 5=always

	Circle the appropriate number				
Chest pain at rest?	1	2	3	4	5
Chest pain with exertion?	1	2	3	4	5
Shortness of breath at rest?	1	2	3	4	5
Shortness of breath with exertion?	1	2	3	4	5
Heart palpitations or fluttering in your chest? .	1	2	3	4	5
Depression?	1	2	3	4	5

13. Are you currently exercising, such as walking or bicycling at least three times/per week for at least 25-30 minutes?
Yes ____ No ____

14. Did you participate in a cardiac rehabilitation program after your heart attack? Yes ____ No ____

15. Are you currently participating in a cardiac rehabilitation program? Yes ____ No ____

I would like the results of this study mailed to me. Yes ____ No ____

Appendix 3

(Date)

(Inside Address)

Dear Dr. (Name),

Currently I am a graduate student in the Nursing Division at Drake University. My thesis proposal is to replicate a study by Mickus that was published in Heart & Lung in 1986. The study involves surveying women who have suffered an MI and asking them about their activities of daily living, pre and post MI. I am extending the study to include more question regarding whether or not they have or are currently involved in a cardiac rehab. program. Since Mickus found 62% reporting decreased activity post MI and only 20% participating in cardiac rehab., I'm curious to find out what Iowa women will report.

I am contacting you on the recommendation of Pat McDermott, Sr. V.P. Nursing Service at Mercy Hospital. Although my proposal has been approved by the Mercy Institutional Review Committee, Ms McDermott felt that I should receive approval of the Cardiologists that practice at Mercy before sending my survey to any of their patients.

I have enclosed a copy of the survey I plan to send to the sample. All names & personal information shall remain confidential and results will be reported only in statistical terms. To facilitate a reply, I have also enclosed a form that can be checked indicating whether or not you approve my contacting your patients. The form can be returned in the enclosed self-addressed, stamped envelope. If you have questions, I can be reached at home 712-837-5483 or at work 712-852-3554. My advisor at Drake is Dr. Linda Brady. She also would be happy to answer any questions. She can be reached at 271-2830. Since I am eager to get started collecting my data, I would appreciate a response as soon as possible.

Sincerely,

Judith K. Donahue, RN, BSN
Master of Science in Nursing Candidate

Please check the appropriate statement:

_____ Yes, Judith Donahue has my/our permission to mail a survey to my/our patients

_____ No, please do not contact any of my/our patients

_____
Signature

Appendix 4

(Date)

(Inside Address)

Dear ,

We have never met but we do have something in common. We have both experienced a heart attack. It is because of that fact that I am writing to you. I have tried to find out more about women and heart disease but there is very little information to be found in the current literature. I am hoping you can help me gather more data.

I am a Registered Nurse, currently enrolled in graduate school at Drake University, Des Moines, Iowa. In order to complete my master's degree in nursing, I am conducting a study of women and their adjustment to life after having had a heart attack. I am asking for your cooperation in helping complete my study while also adding to the body of nursing knowledge.

Enclosed is a survey that I would like for you to complete. It should not take more than ten to fifteen minutes to complete and can be returned to me in the enclosed self-addressed, stamped envelope. All of the information I receive shall remain confidential. Only the overall results will be reported, names and addresses of the participants will be known only to me. If you would like more information you can contact me at the above address or call me collect after 5:00 p.m. at (712) 837-5483. Or, you can call my advisor, Dr. Linda Brady at Drake University. Her toll-free number is (800) 443-7253, ext. 2830 or 271-2830 if you live in Des Moines. You are under no obligation to participate. Your consent to participate will be assumed by the completion of the survey. If you would like to receive the results of the completed study, please check the statement at the end of the survey. Thank you for your consideration.

Sincerely,

Judith K. Donahue, B.S.N., R.N.

(Date)

(Inside Address)

Dear

It has been about one month since I last wrote to you. I had sent you a survey to complete about how you are feeling since your heart attack. I am the R.N. who is conducting a study to gather information about women and heart disease. Since I too have had a heart attack, I am extremely interested in finding out more about how other women are coping with this disease.

Although you are under no obligation to participate, I would appreciate you taking a few minutes to complete the enclosed survey and returning it to me in the self-addressed, stamped envelope. If you need further information you can call me collect at (712) 837-5483 and I would be happy to visit with you about my study. I'll be looking forward to hearing from you. Thank you very much for your consideration.

Sincerely,

Judith K. Donahue, B.S.N., R.N.